

JC05 Recd PCT/PTO 05 APR 2002

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| U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE<br>FORM PTO-1390<br>(REV. 9-2001)   |   | ATTORNEY'S DOCKET NUMBER<br><b>20496-328</b>                        |
| TRANSMITTAL LETTER TO THE UNITED STATES<br>DESIGNATED/ELECTED OFFICE (DO/EO/US)<br>CONCERNING A FILING UNDER 35 U.S.C. 371  |   | U.S. APPLICATION NO. (If known; see 37 CFR 1.5)<br><b>10/089924</b> |
| INTERNATIONAL APPLICATION NO.<br><b>PCT/EP00/09604</b>  | INTERNATIONAL FILING DATE<br><b>30 September 2000</b> | PRIORITY DATE CLAIMED<br><b>7 October 1999</b>                      |
| TITLE OF INVENTION<br><b>DEVICE FOR EXTINGUISHING A FIRE</b>  |   |   |
| APPLICANT(S) FOR DO/EO/US<br><b>Dirk K. SPRAKEL</b>   |   |   |
| Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:   |   |   |
| <p>1. <input checked="" type="checkbox"/> This is a <b>FIRST</b> submission of items concerning a filing under 35 U.S.C. 371.</p> <p>2. <input type="checkbox"/> This is a <b>SECOND</b> or <b>SUBSEQUENT</b> submission of items concerning a filing under 35 U.S.C. 371.</p> <p>3. <input type="checkbox"/> This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (21) indicated below.</p> <p>4. <input type="checkbox"/> The US has been elected by the expiration of 19 months from the priority date (Article 31).</p> <p>5. <input checked="" type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371(c)(2))<br/>a. <input checked="" type="checkbox"/> is attached hereto (required only if not communicated by the International Bureau).<br/>b. <input checked="" type="checkbox"/> has been communicated by the International Bureau.<br/>c. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US).</p> <p>6. <input checked="" type="checkbox"/> An English language translation of the International Application as filed (35 U.S.C. 371(c)(2))<br/>a. <input checked="" type="checkbox"/> is attached hereto.<br/>b. <input type="checkbox"/> has been previously submitted under 35 U.S.C. 154(d)(4).</p> <p>7. <input type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))<br/>a. <input type="checkbox"/> are attached hereto (required only if not communicated by the International Bureau).<br/>b. <input type="checkbox"/> have been communicated by the International Bureau.<br/>c. <input type="checkbox"/> have not been made; however, the time limit for making such amendments has NOT expired.<br/>d. <input type="checkbox"/> have not been made and will not be made.</p> <p>8. <input type="checkbox"/> An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).</p> <p>9. <input type="checkbox"/> An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).</p> <p>10. <input type="checkbox"/> An English language translation of the annexes of the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).</p> |   |   |
| <p><b>Items 11 to 20 below concern document(s) or information included:</b></p> <p>11. <input checked="" type="checkbox"/> An Information Disclosure Statement under 37 CFR 1.97 and 1.98.</p> <p>12. <input type="checkbox"/> An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.</p> <p>13. <input checked="" type="checkbox"/> A <b>FIRST</b> preliminary amendment.</p> <p>14. <input type="checkbox"/> A <b>SECOND</b> or <b>SUBSEQUENT</b> preliminary amendment.</p> <p>15. <input type="checkbox"/> A substitute specification.</p> <p>16. <input type="checkbox"/> A change of power of attorney and/or address letter.</p> <p>17. <input type="checkbox"/> A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825.</p> <p>18. <input type="checkbox"/> A second copy of the published international application under 35 U.S.C. 154(d)(4).</p> <p>19. <input type="checkbox"/> A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).</p> <p>20. <input checked="" type="checkbox"/> Other items or information:<br/>1. <b>PCT International Search Report (in German and English)</b><br/>2. <b>PCT International Preliminary Examination Report (in German)</b><br/>Express Mail Label No. EL616646425US</p>   |   |   |

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|---|---|---|-----------|----|
| U.S. APPLICATION NO. (Unknown see 37 CFR 1.5)   | INTERNATIONAL APPLICATION NO<br><b>PCT/EP00/09604</b> | ATTORNEY'S DOCKET NUMBER<br><b>20496-328</b>          |           |    |
| 10/089924   |   | CALCULATIONS PTO USE ONLY                             |           |    |
| <p>21. <input checked="" type="checkbox"/> The following fees are submitted:</p> <p><b>BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)):</b></p> <p>Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO ..... \$1040.00</p> <p>International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO ..... \$890.00</p> <p>International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO ..... \$740.00</p> <p>International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4) ..... \$710.00</p> <p>International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4) ..... \$100.00</p> |   |   |           |    |
| <b>ENTER APPROPRIATE BASIC FEE AMOUNT =</b>   |   | <b>\$ 890.00</b>                                      |           |    |
| <p>Surcharge of \$130.00 for furnishing the oath or declaration later than <input type="checkbox"/> 20 <input checked="" type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(c)).</p>   |   | \$  |           |    |
| CLAIMS  | NUMBER FILED  | NUMBER EXTRA  | RATE      | \$ |
| Total claims  | <b>6</b> - 20 =                                       | <b>0</b>  | x \$18.00 | \$ |
| Independent claims  | <b>1</b> - 3 =  | <b>0</b>  | x \$84.00 | \$ |
| <b>MULTIPLE DEPENDENT CLAIM(S) (if applicable)</b>  |   | + \$280.00  |           |    |
|   |   | <b>TOTAL OF ABOVE CALCULATIONS =</b> <b>\$ 890.00</b> |           |    |
| <input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above are reduced by 1/2.  |   | +   |           |    |
|   |   | <b>SUBTOTAL =</b> <b>\$ 890.00</b>                    |           |    |
| <p>Processing fee of \$130.00 for furnishing the English translation later than <input type="checkbox"/> 20 <input checked="" type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(f))</p>   |   | \$  |           |    |
|   |   | <b>TOTAL NATIONAL FEE =</b> <b>\$ 890.00</b>          |           |    |
| <p>Fee for recording the enclosed assignment (37 CFR 1.21(h)) The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) \$40.00 per property</p>   |   | \$  |           |    |
|   |   | <b>TOTAL FEES ENCLOSED =</b> <b>\$ 890.00</b>         |           |    |
|   |   | Amount to be refunded:                                |           | \$ |
|   |   | charged:  |           | \$ |
| <p>a. <input type="checkbox"/> A check in the amount of \$ _____ to cover the above fees is enclosed.</p> <p>b. <input checked="" type="checkbox"/> Please charge my Deposit Account No. <b>16-2500</b> in the amount of \$ <b>890.00</b> to cover the above fees. A duplicate copy of this sheet is enclosed.</p> <p>c. <input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. <b>16-2500</b>. A duplicate copy of this sheet is enclosed.</p> <p>d. <input type="checkbox"/> Fees are to be charged to a credit card. <b>WARNING: Information on this form may become public. Credit card information should not be included on this form.</b> Provide credit card information and authorization on PTO-2038.</p>  |   |   |           |    |
| <p><b>NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137 (a) or (b)) must be filed and granted to restore the application to pending status.</b></p>  |   |   |           |    |
| <p>SEND ALL CORRESPONDENCE TO:<br/> <b>Proskauer Rose LLP</b><br/> <b>Patent Department</b><br/> <b>1585 Broadway</b><br/> <b>New York, NY 10036</b></p>  |   |   |           |    |
| <p><b>SIGNATURE</b> <br/> <b>Rachel S. Watt</b><br/> <b>Patent Agent</b></p>   |   |   |           |    |
| <p>NAME _____</p>   |   |   |           |    |
| <p><b>Date:</b> <b>5 April 2002</b></p>   |   |   |           |    |
| <p><b>Phone:</b> <b>212.969.3000</b></p>  |   |   |           |    |
| <p><b>Fax:</b> <b>212.969-2900</b></p>  |   |   |           |    |
| <p><b>REGISTRATION NUMBER</b> <b>46,186</b></p>   |   |   |           |    |

Attorney Docket No. : 20496-328

**IN THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US)**

|                          |                                    |
|--------------------------|------------------------------------|
| Applicant :              | Dirk K. SPRAKEL                    |
| Int'l Appl. No. :        | PCT/EP00/09604                     |
| Int'l. Filing Date :     | 30 September 2000                  |
| Priority Date :          | 7 October 1999                     |
| Title of the Invention : | DEVICE FOR EXTINGUISHING<br>A FIRE |

**PRELIMINARY  
AMENDMENT**

|                                  |
|----------------------------------|
| Express Mail Mailing Label No. : |
| <u>EL616646425US</u>             |

Assistant Commissioner for Patents  
Box PCT  
Washington, DC 20231

Sir:

Prior to examination, please amend the above-identified patent application as follows:

**IN THE SPECIFICATION:**

Page 1, after the title, please insert --BACKGROUND OF THE INVENTION--.

Page 2, before the third full paragraph, which begins with "Proceeding from the above," please insert --SUMMARY OF THE INVENTION--.

Page 3, before the sixth full paragraph, which begins with "The invention is explained," please insert --BRIEF DESCRIPTION OF THE DRAWINGS--

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Page 4, before the first full paragraph, which begins with "The device 1 for,"  
please insert --DETAILED DESCRIPTION OF THE INVENTION--.

**IN THE CLAIMS:**

Please amend claims 3, 4, and 5 to remove their multiple dependencies. A "marked-up" version of the amended claims is enclosed herewith in accordance with 37 C.F.R. 1.121 (c)(1).

- 3. (Amended) The device according to claim 1, characterised in that the pressure at rest is equal to the ambient pressure.
- 4. (Amended) The device according to claim 1, characterised in that the pressure at rest is greater than the ambient pressure, and the supply line (6,16,7,8,9,17,19,24) features a pressure sensor.
- 5. (Amended) The device according to claim 1, characterised in that several extinguishing nozzles (10,11,12,14,18,21) are connected to the connection end (7a,8a,9a,17a,24a) of the supply line (6,16,7,8,9,17,19,24) by means of a branching element (15,23).--

**IN THE ABSTRACT**

Please delete the last line which recites: "Fig. 3 is intended for the Abstract."

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**REMARKS**

Amendments are being made to the Specification to provide headings and to the Abstract to conform with accepted U.S. practice. The claims are amended to remove multiple dependencies and to further clarify the invention. No new matter has been added.

Please proceed to examine the application as amended herein.

Respectfully submitted,  
PROSKAUER ROSE LLP  
Attorneys for Applicant(s)

Date: April 5, 2002

By

  
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**Amended Claims - Marked-Up Version**

3. (Amended) The device according to claim 1 [or 2], characterised in that the pressure at rest is equal to the ambient pressure.
4. (Amended) The device according to claim 1 [or 2], characterised in that the pressure at rest is greater than the ambient pressure, and the supply line (6,16,7,8,9,17,19,24) features a pressure sensor.
5. (Amended) The device according to claim 1, [one of the preceding claims] characterised in that several extinguishing nozzles (10,11,12,14,18,21) are connected to the connection end (7a,8a,9a,17a,24a) of the supply line (6,16,7,8,9,17,19,24) by means of a branching element (15,23).

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DEVICE FOR EXTINGUISHING A FIRE

The invention relates to a device for the extinguishing of a fire with extinguishing nozzles arranged in areas of a structure, in particular of a building or a ship, said nozzles being connected in each case to a connection end of a supply line filled with extinguishing fluid, said supply line connecting the extinguishing nozzles to an extinguishing fluid supply device which, in the event of a fire, imposes extinguishing fluid under pressure onto the supply line.

Such systems are known for fighting fires in buildings. The supply line is at least in part filled with extinguishing fluid under pressure even in the position of rest. The supply line or the extinguishing nozzles connected to the supply line are equipped with valves, which avoid the unintentional escape of extinguishing fluid in the position of rest. In the event of a fire the valves open automatically or are remotely controlled by an actuator device, with the result that extinguishing fluid can be emitted from the extinguishing nozzles.

With these systems the extinguishing nozzles can be designed in such a way that the extinguishing nozzles are fitted with open nozzle inserts, which can be connected to the supply line by means of channels formed in the extinguishing nozzles. These nozzle inserts can be designed in such a way that, when subjected to an extinguishing fluid under high pressure, an extinguishing mist is generated by the nozzles.

An advantage with filled systems of this type is that the volume of the filled supply line is fully used for the storage of the extinguishing fluid. In this way it is possible, in particular with such systems in which the supply of extinguishing fluid is effected by means of stored pressure energy, for the stored energy available and the capacity of the pressure vessels to be exploited with optimum effect. This makes it possible for smaller pressure vessels to be used, which in turn achieves savings in costs and spatial requirements.

In comparison with unfilled systems, in which the supply line is empty in the state of rest, and is only filled in the event of a fire with extinguishing fluid from the extinguishing fluid supply, the filled systems offer the advantage that the time required with unfilled systems for the supply line to be filled is not a consideration. With filled systems, the extinguishing fluid emerges directly after the valves are opened, as a result of which the response time of the system is shortened in the event of a fire alarm, and the fire is prevented from spreading any further.

Finally, with systems fitted with extinguishing fluid under pressure, pumps and pressurised containers can be used which are less high-performing and less elaborate in comparison with unfilled systems, which in the event of a fire only increase the pressure prevailing in the supply line to the pressure needed for extinguishing. This advantage becomes particularly apparent in systems in which extinguishing fluid is deployed under high pressure in order to create an extinguishing mist.

A disadvantage with the systems described, however, is the considerable expenditure for manufacture, installation, and maintenance for the valve devices used with these systems, and for the actuation systems for the valves which may be required. In addition to this, the risk pertains that the valves may fail in the event of a fire, rendering the fighting of the fire impossible.

The object of the invention is to create a device of the type described in the preamble with simple and economical means, which will render a reliable response possible.

This object is achieved according to the invention in that, with such a device, a bursting disk is arranged in the area of the connection end of the supply line, said bursting disk bursting when a predetermined bursting pressure of the extinguishing fluid in the supply line is reached, with the result that the extinguishing fluid flows unimpeded into the extinguishing nozzle, and that the supply line, in the state of rest of the device, is filled with extinguishing fluid at a pressure of rest which is lower than the bursting pressure.

In a device according to the invention, the supply lines are filled with extinguishing fluid. The flow of extinguishing fluid to the inherently open extinguishing nozzles is in this situation closed off in the state of rest by a bursting disk, which is arranged in the area of the connection end of the connection line allocated to the individual extinguishing nozzles in each case. In this way, by the use of a simple and economical bursting disk, the invention exploits the advantages of a filled system for fighting fires, as well as enabling the reliable response of the device. Thus, a system for fire fighting designed in accordance with the invention features short reaction times, since in the state of rest the extinguishing fluid is already located in immediate proximity to the extinguishing nozzles, and the distance to be covered by the fluid to the nozzles is short.

In addition to this, by doing without valves and the actuation system for them that might be required, the reliability of the device is perceptibly increased. By contrast with valves, the bursting disks used

according to the invention cannot become jammed. Since the use of bursting disks also means that an actuation mechanism can be done away with, there is also no risk any longer of these failing.

In addition to this, the use of bursting disks is, as a rule, more economical than that of valves.

To advantage, the nozzle inserts used in a device according to the invention generate an extinguishing mist. With such an extinguishing mist, a fire can be effectively fought with a small quantity of extinguishing medium. The pressures of the extinguishing fluid required for the creation of such a mist amount to up to 300 bar.

For preference, the pressure at rest of the extinguishing fluid is equal to the ambient pressure. In this way, the expenditure can be avoided which is always required with known filled systems for the maintaining of the pressure at rest.

As an alternative, in order to monitor leaks, the pressure at rest of the extinguishing fluid can be higher than that of the ambient pressure, but lower than the bursting pressure. In this way, a pressure drop, and therefore a leak in the filled supply line, can be detected, for example by means of a pressure sensor arranged in the filled supply line, said sensor detecting the pressure drop in the supply line incurred as a result of a leak.

Depending on the individual local conditions, it may also be to the purpose if several extinguishing nozzles are connected to the connection end of the supply line by means of a branching element. With this embodiment of the invention, in the state of rest the flow of extinguishing fluid to more than one extinguishing nozzle is closed off simultaneously by means of a bursting disk. This is particularly to the purpose if, in the event of fire, extinguishing nozzles need to be provided simultaneously with extinguishing fluid for the protection of a particular building or a specific area. If necessary, in this situation the extinguishing nozzles can in each case be connected by means of an intermediate line to the branching element, in order to be able to guarantee the plane or spatial coverage of a specific section.

The invention is explained hereinafter in greater detail on the basis of drawings showing an embodiment. These show:

Fig. 1A device for extinguishing a fire in a schematic representation;

Fig. 2A variant of the device according to Fig. 1;

Fig. 3An extinguishing nozzle used in one of the devices according to Figures 1 or 2, in a partially exploded side view.

The device 1 for the extinguishing of a fire features an extinguishing fluid supply 2, which contains a fluid container and a high-pressure pump, not individually shown. As an alternative, the extinguishing fluid supply 2 can also be equipped with one or more pressure reservoirs, in which extinguishing fluid is stored under pressure. In addition, the extinguishing fluid can be stored under ambient pressure, and subjected to pressure from one or more pressure reservoirs only in the event of activation. The extinguishing fluid supply 2 is controlled by a control device 3, which receives the fire alarm signal from a fire monitor device 4.

In the embodiment according to Fig. 1, extinguishing nozzles 10, 11, 12 are connected to the extinguishing fluid supply 2 by means of a main supply line 6 and individual supply lines 7, 8, 9, each branching off from the main supply line 6.

In the embodiment according to Fig. 2, a first group 13 of three extinguishing nozzles 14 is connected by means of a branching element 15 to a supply line 17 departing from a main supply line 16. In addition to this, an individual extinguishing nozzle 18 is connected directly to a supply line 19, which likewise departs from the main supply line 16. With a third group 20 of three extinguishing nozzles 21, the extinguishing nozzles 21 are finally connected via intermediate lines 22 and a branching element 23 to a third supply line 24, departing from the main supply line 16.

Each of the extinguishing nozzles 10, 11, 12, 14, 18, 21 is designed in the same way as the extinguishing nozzle 10 shown by way of example in Fig. 3. Accordingly, all the extinguishing nozzles 10, 11, 12, 14, 18, 21 feature open nozzle inserts 25, which are connected via channels 26 formed in the individual extinguishing nozzle to an inflow borehole 27 formed in the shoulder element 29, which is provided with an external thread 30. The nozzle inserts 25, when subjected to an extinguishing fluid under high pressure of up to 300 bar, generate a finely distributed extinguishing mist.

The external thread 30 of the shoulder element 29 of the extinguishing nozzles 10, 11, 12, 18 is screwed into a corresponding internal thread on the respective connection end 7a, 8a, 9a of the supply lines 7, 8, 9 and 19 respectively, while the external thread 30 of the shoulder elements 29 of the extinguishing nozzles 14 are in each case screwed into a corresponding internal thread, not shown here, on the respective

connection ends 15a of the branching element 15. Accordingly, the extinguishing nozzles 21 are connected to the connection end of the intermediate line 22 allocated to them.

With the extinguishing nozzles 10, 11, 12, 18, as shown in Fig. 3, in the state of rest of the device 1, the inlet aperture 27a of the inflow borehole 27 is closed off by means of a bursting disk 33, which is located in the connection end 7a of the individual supply line 7, 8, 9 and 19 respectively. A corresponding bursting disk, not shown here, is located in the individual connection end 17a or 24a respectively of the supply line 17 and 24, and in the state of rest of the device 1 keeps the inflow closed off of the branching element 15 or of the branching element 23 respectively.

In this state of rest of the device 1, the main supply line 6 (Fig. 1) and 16 (Fig. 2) respectively, and the supply lines 7, 8, 9 (Fig. 1) or 17, 19, 24 (Fig. 2) respectively, departing from it, are filled with extinguishing fluid, such as water, for example. In this situation a pressure at rest prevails in the pipeline system filled with extinguishing fluid and formed by the main supply line 6 or 16 respectively and the supply lines 7, 8, 9 and 17, 19, 24 respectively departing from it, said pressure at rest corresponding approximately to the ambient pressure.

The fire monitor 4 monitors a room, a specific area, or a specific building for the outbreak of fire. In the event of a fire breaking out, the fire monitor 4 issues a fire alarm signal to the control device 3. This then causes the extinguishing fluid supply system 2 to impose extinguishing fluid, kept under pressure, on the main supply line 6 or 16 respectively, and the supply lines 7, 8, 9 and 17, 19, 24 respectively departing from them.

As soon as the pressure of the extinguishing fluid present at the individual bursting disk 33 rises above the bursting pressure of the bursting disk 33 concerned, the bursting disk 33 bursts. Once the individual bursting disk 33 has burst, extinguishing fluid flows unimpeded into the extinguishing nozzles 10, 11, 12, 18, or is likewise distributed unimpeded via the branching elements 15, 23 to the extinguishing nozzles 14 or 21 respectively. The extinguishing fluid flowing in such way into the extinguishing nozzles 10, 11, 12, 14, 18, 21 emerges as extinguishing mist from the nozzle inserts 25 of the extinguishing nozzles.

It is self-explanatory that, as an alternative to the foregoing embodiment examples, it is also possible to arrange at the extinguishing nozzles 14, 21 of the groups 13 and 15, in the embodiment

according to Fig. 2, a bursting disk immediately upstream of the individual extinguishing nozzles 15 or 21 respectively. The embodiment described here is always to the purpose if the distance interval between the extinguishing nozzles 14, 21 is in each case shorter in comparison with the other line lengths, so that on the one hand the expenditure for the installation of the bursting disk is minimised and, on the other, the time for the filling of the branching elements and intermediate pipes, which are empty in the state of rest, is nevertheless short.

REFERENCE DESIGNATION LIST

- |          |   |
|----------|---|
| 1        | Extinguishing device                        |
| 2        | Extinguishing fluid supply                  |
| 3        | Control device                              |
| 4        | Fire monitor                                |
| 6        | Main supply line                            |
| 7,8,9    | Supply lines                                |
| 7a,8a,9a | Connection ends of supply line 7,8,9        |
| 10,11,12 | Extinguishing nozzles                       |
| 13       | Group of three extinguishing nozzles 14     |
| 14       | Extinguishing nozzle                        |
| 15       | Branching element                           |
| 15a      | Connection ends of the branching element 15 |
| 16       | Main supply line                            |
| 17       | Supply line                                 |
| 17a      | Connection end of the supply line 17        |
| 18       | Extinguishing nozzle                        |
| 19       | Supply line                                 |
| 20       | Group of three extinguishing nozzles 21     |
| 21       | Extinguishing nozzle                        |
| 22       | Intermediate lines                          |
| 23       | Branching element                           |
| 24       | Supply line                                 |
| 24a      | Connection end of the supply line 24        |
| 25       | Open nozzle inserts                         |
| 26       | Channels                                    |
| 27       | Inflow borehole                             |
| 27a      | Inlet aperture of the inflow borehole 27    |
| 29       | Shoulder element                            |
| 30       | External thread                             |
| 33       | Bursting disk                               |

CLAIMS

1. A device for extinguishing fires, with extinguishing nozzles (10,11,12,14,18,21) arranged in areas of a structure, in particular of a building or a ship, said nozzles being in each case connected to a connection end (7a,8a,9a,17a,24a) of a supply line (6,16,7,8,9,17,19,24) filled with extinguishing fluid, said supply line connecting the nozzles (10,11,12,14,18,21) to a extinguishing fluid supply device (2), which in the event of fire imposes extinguishing fluid under pressure onto the supply line (6,16,7,8,9,17,19,24), characterised in that a bursting disk (33) is arranged in the area of the connection end (7a,8a,9a,17a,24a) of the supply line (6,16,7,8,9,17,19,24), said bursting disk bursting when a predetermined bursting pressure of the extinguishing fluid in the supply line (6,16,7,8,9,17,19,24) is reached, with the result that extinguishing fluid flows unimpeded into the extinguishing nozzle (10,11,12,14,18,21), and that the supply line (6,16,7,8,9,17,19,24) in the state of rest of the device (1) is filled with extinguishing fluid at a pressure at rest which is lower than the bursting pressure.
2. The device according to Claim 1, characterised in that the extinguishing nozzles (10,11,12,14,18,21) feature nozzle inserts (25) which generate an extinguishing mist.
3. The device according to Claim 1 or 2, characterised in that the pressure at rest is equal to the ambient pressure.
4. The device according to Claim 1 or 2, characterised in that the pressure at rest is greater than the ambient pressure, and the supply line (6,16,7,8,9,17,19,24) features a pressure sensor.
5. The device according to one of the preceding claims, characterised in that several extinguishing nozzles (10,11,12,14,18,21) are connected to the connection end (7a,8a,9a,17a,24a) of the supply line (6,16,7,8,9,17,19,24) by means of a branching element (15,23).
6. The device according to Claim 5, characterised in that the extinguishing nozzles (10,11,12,14,18,21) are in each case connected via an intermediate line (22) to the branching element (23).

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ABSTRACT

With a device for extinguishing a fire, with extinguishing nozzles (10) arranged in areas of a structure, and of a building or a ship in particular, said extinguishing nozzles being connected in each case to a connection end (7a) of a supply line (7) filled with extinguishing fluid, said supply line connecting the extinguishing nozzles (10) to an extinguishing fluid supply device, which in the event of a fire imposes on the supply line (7) extinguishing fluid under pressure, simple and economical means allow for a reliable response, in that a bursting disk (33) is arranged in the area of the connection end (7a) of the supply line (7), which bursts at the attaining of a predetermined bursting pressure of the extinguishing fluid in the supply line (7), so that extinguishing fluid flows unimpeded into the extinguishing nozzle (10), and in which the supply line (7) in the position of rest is filled with extinguishing fluid at a pressure of rest which is lower than the bursting pressure.

Fig. 3 is intended for the Abstract.

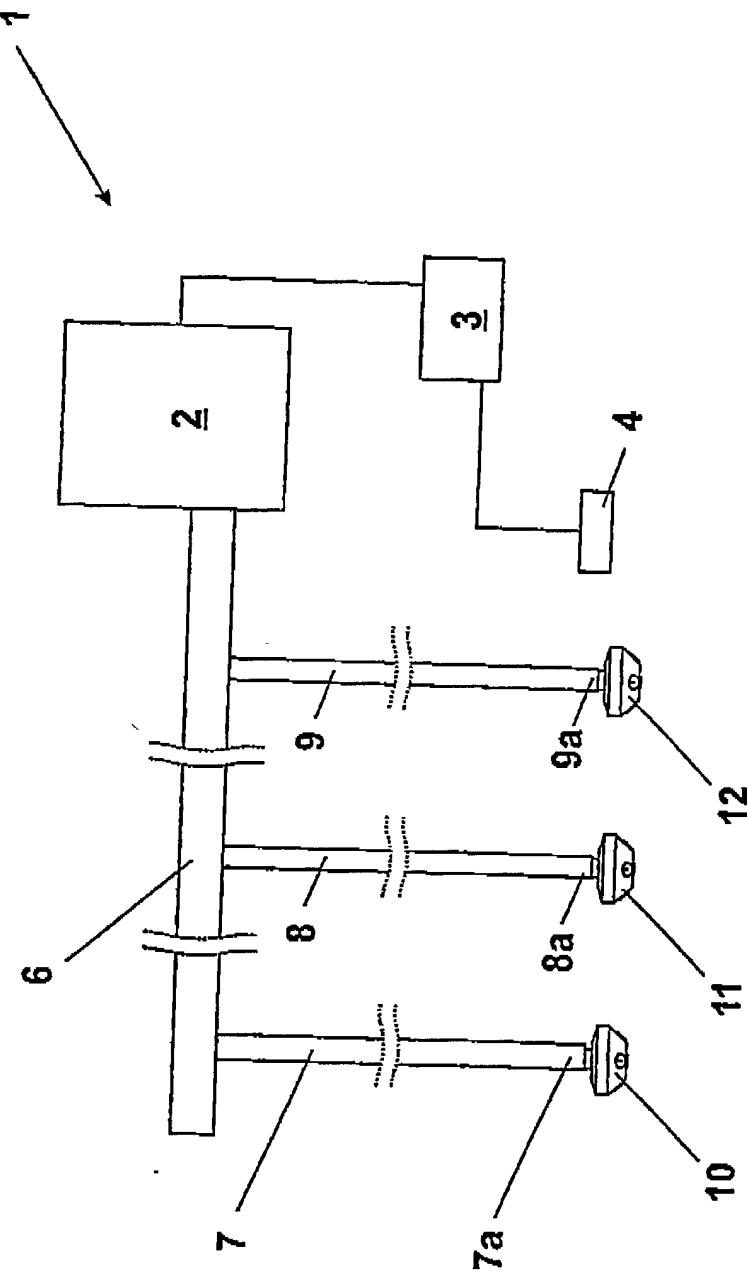


Fig. 1

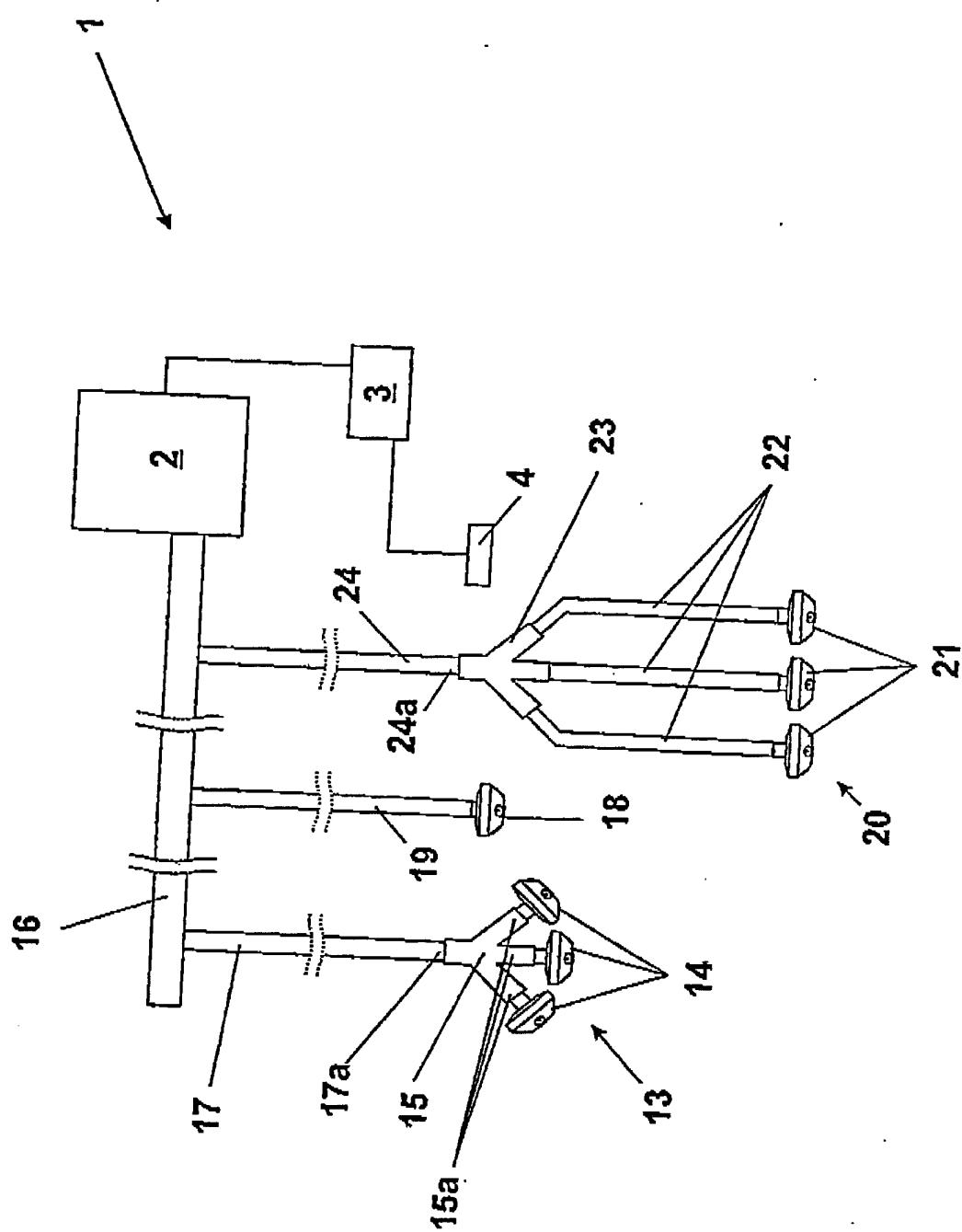
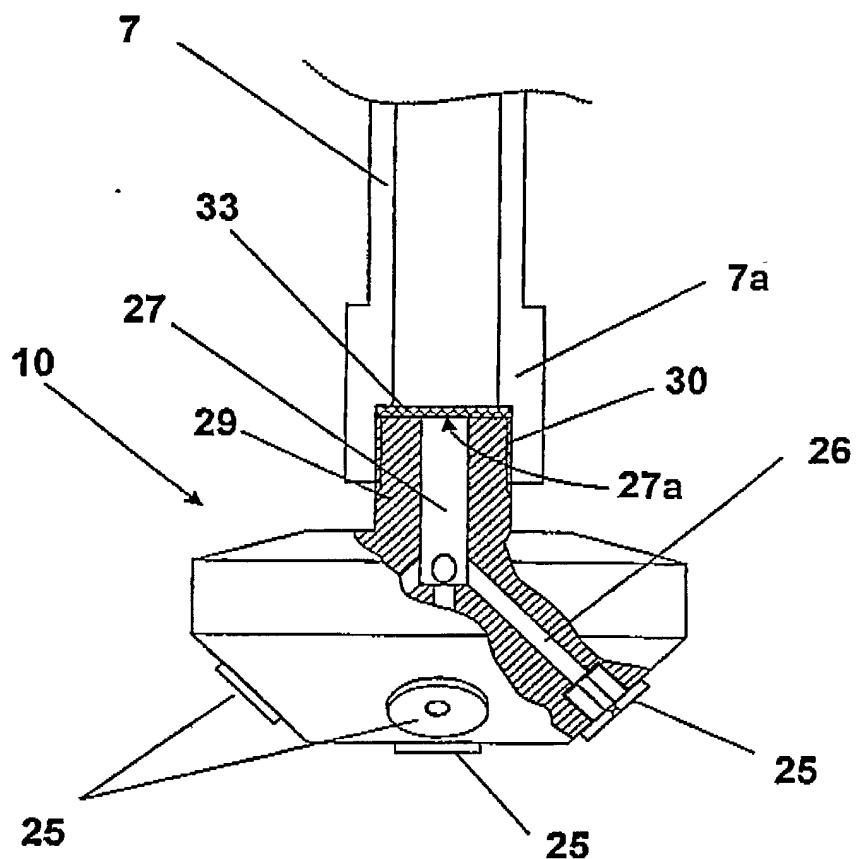


Fig. 2



**Fig. 3**

## DECLARATION FOR PATENT APPLICATION

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name. I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter, which is claimed and for which a patent is sought on the invention entitled:

### DEVICE FOR EXTINGUISHING A FIRE

the specification of which is attached hereto unless the following box is checked:

was filed on September 30, 2000 as United States Application Number or PCT International Application Number PCT/EP00/09604 and was amended on April 5, 2002 (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above. I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR § 1.56.

I hereby claim foreign priority benefits under 35 U.S.C. § 119(a) or § 365(b) of any foreign application(s) for patent or inventor's certificate, or § 365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified, by checking the box, any foreign application for patent or inventor's certificate, or PCT International Application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application(s)

Priority Not Claimed

|   |                             |  |  |
|---|-----------------------------|--|--|
| <input checked="" type="checkbox"/> <u>199 48 324.8</u><br>(Number) | <u>Germany</u><br>(Country) | <u>7/10/1999</u><br>(Day/Month/Year Filed) |  |
|---|-----------------------------|--|--|

|                                   |                          |  |  |
|-----------------------------------|--------------------------|--|--|
| <u>PCT/EP00/09604</u><br>(Number) | <u>WIPO</u><br>(Country) | <u>30/9/2000</u><br>(Day/Month/Year Filed) |  |
|-----------------------------------|--------------------------|--|--|

I hereby claim the benefit under 35 U.S.C. § 119(e) of any United States provisional application(s) listed below.

(Application Number)

(Filing Date)

(Application Number)

(Filing Date)

I hereby claim the benefit under 35 U.S.C. § 120 of any United States application(s), or § 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of 35 U.S.C. § 112, I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR § 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application.

(Application Number)

(Filing Date )

(Status--patented,  
pending, abandoned)

(Application Number)

(Filing Date

(Status--patented,  
pending, abandoned)

I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith:

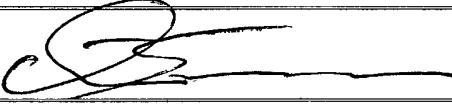
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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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|   |                     |
|---|---------------------|
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